

Table 18. Calculated compositions of liquid fractionates and crystalline residua derived from the basaltic andesite and andesite compositions at 27 kb

| Composition | Basaltic andesite | | | Andesite | |
|--|-------------------|-------------------|------------------|----------------|-------|
| | | 1,390° C | 1,360° C | 1,340° C | |
| Temperature | | | | | |
| Nature and estimated % of crystals | Initial liquid | 4% ga 2% cpx | 9% ga 11% cpx | Initial liquid | 5% ga |
| <i>Liquid fractionate</i> | | | | | |
| SiO ₂ | 56.4 | 57.2 ^a | 59.2 | 62.2 | 63.4 |
| TiO ₂ | 1.4 | 1.4 | 1.4 | 1.1 | 1.1 |
| Al ₂ O ₃ | 16.6 | 16.4 | 16.3 | 17.3 | 17.0 |
| Fe ₂ O ₃ | 3.0 | 3.2 | 3.7 | 0.3 | 0.3 |
| FeO | 5.7 | 5.2 | 4.2 | 5.9 | 5.3 |
| MnO | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| MgO | 4.3 | 3.8 | 2.9 | 2.4 | 2.0 |
| CaO | 8.5 | 8.4 | 7.6 | 5.2 | 5.1 |
| Na ₂ O | 3.0 | 3.1 | 3.4 | 3.3 | 3.5 |
| K ₂ O | 1.0 | 1.1 | 1.3 | 2.3 | 2.4 |
| | 100.0 | 99.9 | 100.1 | 100.1 | 100.2 |
| Mol. prop. | | | | | |
| $\frac{100 \text{ MgO}}{\text{MgO} + \text{FeO}_{\text{Total}}}$ | 47.7 | 45.6 | 40.8 | 41.0 | 39.0 |
| <i>CIPW norm</i> | | | | | |
| Qz | 10.7 | 12.5 | 15.3 | 15.5 | 16.7 |
| Or | 5.9 | 6.0 | 7.7 | 13.6 | 14.2 |
| Ab | 25.4 | 26.2 | 28.8 | 27.9 | 29.7 |
| An | 28.9 | 27.8 | 25.4 | 25.7 | 23.6 |
| Diop | 10.8 | 11.1 | 9.8 | 0.2 | 1.5 |
| Hyp | 11.3 | 8.9 | 5.0 | 14.8 | 12.1 |
| Ol | — | — | — | — | — |
| Mt | 4.3 | 4.6 | 5.4 | 0.4 | 0.4 |
| Ilm | 2.7 | 2.7 | 2.7 | 2.1 | 2.1 |
| <i>Crystal residuum</i> | | | | | |
| SiO ₂ | | 43.4 | 45.0 | | 39.1 |
| TiO ₂ | | 0.9 | 1.2 | | 1.1 |
| Al ₂ O ₃ | | 19.1 | 17.6 | | 22.4 |
| FeO | | 13.4 | 11.7 | | 17.7 |
| MnO | | 0.2 | 0.2 | | 0.4 |
| MgO | | 11.9 | 10.1 | | 10.7 |
| CaO | | 10.4 | 12.0 | | 7.4 |
| Na ₂ O | | 0.7 | 1.2 | | — |
| K ₂ O | | — | — | | — |
| | | 100.0 | 99.0 | | 98.8 |
| Mol. prop. | | | | | |
| $\frac{100 \text{ MgO}}{\text{MgO} + \text{FeO}}$ | | 61.3 | 60.6 | | 51.9 |

^a Denotes compositions determined from analyses calculated in the manner described on p. 116.

Table 19. *Calculated compositions of liquid fractionates and crystalline residua derived from the high-alumina olivine tholeiite and high-alumina quartz tholeiite compositions at 36 kb*

| Compositions | High-alumina olivine tholeiite | | High-alumina quartz tholeiite | | |
|------------------------------------|--------------------------------|-------------------|-------------------------------|-------------------|-------------------|
| | 1,520° C | | 1,510° C | 1,490° C | |
| Nature and estimated % of crystals | Initial liquid | 20% cpx 10% ga | Initial liquid | 10% cpx 5% ga | 15% cpx 10% ga |
| <i>Liquid fractionate</i> | | | | | |
| SiO ₂ | 50.3 | 51.9 ^a | 52.9 | 53.9 ^a | 55.1 ^a |
| TiO ₂ | 1.7 | 2.0 | 1.5 | 1.6 | 1.6 |
| Al ₂ O ₃ | 17.0 | 16.8 | 16.9 | 17.0 | 16.7 |
| Fe ₂ O ₃ | 1.5 | 2.1 | 0.3 | 0.4 | 0.4 |
| FeO | 7.6 | 7.1 | 7.9 | 7.9 | 7.4 |
| MnO | 0.16 | 0.17 | 0.2 | 0.2 | 0.2 |
| MgO | 7.8 | 6.3 | 7.0 | 6.1 | 5.6 |
| CaO | 11.4 | 10.8 | 10.0 | 9.5 | 9.2 |
| Na ₂ O | 2.8 | 3.1 | 2.7 | 2.9 | 3.0 |
| K ₂ O | 0.18 | 0.26 | 0.6 | 0.7 | 0.8 |
| | 100.4 | 100.5 | 100.0 | 100.2 | 100.0 |
| <i>Mol. Prop.</i> | | | | | |
| 100 MgO | | | | | |
| MgO + FeO _{Total} | 60.7 | 55.5 | 60.4 | 56.8 | 56.3 |
| <i>CIPW norm</i> | | | | | |
| Qz | | 1.4 | 1.3 | 2.9 | 4.9 |
| Or | 1.1 | 1.6 | 3.5 | 4.2 | 4.8 |
| Ab | 23.7 | 26.2 | 22.8 | 24.6 | 25.4 |
| An | 33.3 | 31.2 | 32.2 | 31.3 | 29.7 |
| Diop | 18.9 | 18.2 | 14.2 | 12.9 | 13.0 |
| Hyp | 11.9 | 15.2 | 22.6 | 20.8 | 18.6 |
| Ol | 6.2 | — | — | — | — |
| Mt | 2.2 | 3.0 | 0.4 | 0.6 | 0.6 |
| Ilm | 3.2 | 3.8 | 2.8 | 3.0 | 3.0 |
| <i>Crystal residuum</i> | | | | | |
| SiO ₂ | | 46.6 | | 47.5 | 46.4 |
| TiO ₂ | | 1.0 | | 1.0 | 1.1 |
| Al ₂ O ₃ | | 17.4 | | 16.4 | 17.6 |
| FeO | | 8.7 | | 7.9 | 9.4 |
| MnO | | 0.1 | | 0.1 | 0.2 |
| MgO | | 11.4 | | 12.3 | 11.2 |
| CaO | | 12.9 | | 13.0 | 12.4 |
| Na ₂ O | | 2.0 | | 1.8 | 1.7 |
| K ₂ O | | — | | — | — |
| | | 100.1 | | 100.0 | 100.0 |
| <i>Mol. prop.</i> | | | | | |
| 100 MgO | | | | | |
| MgO + FeO | | 70.0 | | 73.5 | 68.0 |

^a Denotes compositions determined from analyses calculated in the manner described on p. 116.